

AMENDMENT UNDER 37 C.F.R. § 1.111
Appln. No. 09/601,078
Docket NO. Q60201

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A pneumatic tire comprising:

a plurality of reinforcing layers in each of which cords, which are inclined at a predetermined angle with respect to a tire circumferential direction, are provided parallel to each other;

a tread provided on a top of said reinforcing layers which are laminated; and

a block-shaped land portion having a sipe, said block-shaped land portion being defined on a tread surface by main grooves formed in the tire circumferential direction and by lug grooves formed in a direction intersecting with the main grooves;

wherein said sipe is shaped so as to be twisted around a first central axis of twisting extending in a tire radial direction in the block shaped land portion and a second central axis of twisting extending substantially in a tire transverse direction, a position P1 of said first central axis of twisting in a region between one end surface of the block-shaped land portion and another end surface in the tire transverse direction and a position P2 of said central axis of twisting in a region between a contact patch area and a bottom of the sipe in the tire radial direction being within ranges satisfying the following expressions:

$$0.2W \leq P1 \leq 0.8W$$

$$0.2F \leq P2 \leq 0.6F$$

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wherein P1, P2 represent the position of the first and second central axes of twisting; W represents a distance from one end surface to the other end surface of the block-shaped land portion in the tire transverse direction; and F represents a distance from the contact patch area to the bottom of the sipe in the tire radial direction; and

wherein the sipe is twisted such that a self alignment torque is generated by the block so as to reduce a self alignment torque generated due to the cords provided parallel to each other in an outermost reinforcing layer of the plurality of reinforcing layers;

wherein the block-shaped land portion is twisted from the contact patch area toward the bottom portion, and

wherein a direction of twisting of the block shaped land portion is opposite to a direction of twisting of the sipe from the contact patch area toward the bottom of the sipe.

2. (currently amended): A pneumatic tire comprising:

a plurality of reinforcing layers in each of which cords, which are inclined at a predetermined angle with respect to a tire circumferential direction, are provided parallel to each other;

a tread provided on a top of said reinforcing layers which are laminated; and

a block-shaped land portion having a sipe, said block-shaped land portion being defined on a tread surface by main grooves formed in the tire circumferential direction and by lug grooves formed in a direction intersecting with the main grooves;

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wherein said sipe is shaped so as to have a first protruding portion protruding in a first direction with respect to a virtual central plane and a second protruding portion protruding in a second direction opposite the first direction across the virtual central plane, said sipe including a surface portion exposed on a contact patch area of said block-shaped land portion and a bottom portion formed in a bottom of the sipe, the virtual central plane and thereby said sipe being twisted from the surface portion toward the bottom portion; ~~and~~

wherein the sipe is twisted such that a self alignment torque is generated by the block so as to reduce a self alignment torque generated due to the cords provided parallel to each other in an outermost reinforcing layer of the plurality of reinforcing layers;

wherein the block-shaped land portion is twisted from the contact patch area toward the bottom portion, and

wherein a direction of twisting of the block shaped land portion is opposite to a direction of twisting of the sipe from the contact patch area toward the bottom of the sipe.

3. (original): A pneumatic tire according to claim 2, wherein said sipe is wave-shaped in a section parallel to the contact patch area of the block-shaped land portion.

4. (original): A pneumatic tire according to claim 2, wherein said sipe is wave-shaped in a tire circumferential directional section of the block-shaped land portion.

5. (previously amended): A pneumatic tire according to claim 2, wherein said virtual central plane and thereby said sipe is shaped so as to be twisted around a first central axis of twisting extending in the tire radial direction in said block-shaped land portion, a position P1 of said first central axis of twisting in a region between one end surface of the block-shaped land portion and the other end surface in the tire transverse direction being within a range satisfying the following relational expression:

$$0.2W \leq P1 \leq 0.8W$$

wherein P1 represents the position of the first central axis of twisting; and W represents a distance from one end surface to the other end surface of the block-shaped land portion in the tire transverse direction.

6. (previously amended): A pneumatic tire according to claim 2, wherein said virtual central plane and thereby said sipe is shaped so as to be twisted around a second central axis of twisting extending substantially in the tire transverse direction in said block-shaped land portion, a position P2 of said second central axis of twisting in a region between the contact patch area and the bottom of the sipe in the tire radial direction being within a range satisfying the following relational expression:

$$0.2F \leq P2 \leq 0.6F$$

wherein P2 represents the position of the second central axis of twisting; and F represents a distance from the contact patch area to the bottom of the sipe in the tire radial direction.

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7. (currently amended): A pneumatic tire comprising:

a plurality of reinforcing layers in each of which cords, which are inclined at a predetermined angle with respect to a tire circumferential direction, are provided parallel to each other;

a tread provided on a top of said reinforcing layers which are laminated; and

a block-shaped land portion having a sipe, said block-shaped land portion being defined on a tread surface by main grooves formed in the tire circumferential direction and by lug grooves formed in a direction intersecting with the main grooves;

wherein said sipe is shaped as a closed loop which is connected with neither said main groove nor said lug groove, said sipe including a surface portion exposed on a contact path area of the block shaped land portion and a bottom portion formed in a bottom of a sipe, the sipe being twisted from said surface portion toward said bottom portion; ~~and~~

wherein the sipe is twisted such that a self alignment torque is generated by the block so as to reduce a self alignment torque generated due to the cords provided parallel to each other in an outermost reinforcing layer of the plurality of reinforcing layers;

wherein the block-shaped land portion is twisted from the contact patch area toward the bottom portion, and

wherein a direction of twisting of the block shaped land portion is opposite to a direction of twisting of the sipe from the contact patch area toward the bottom of the sipe.

8.-10. (canceled).